

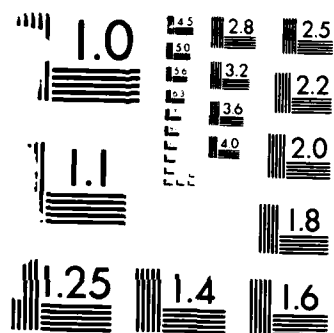
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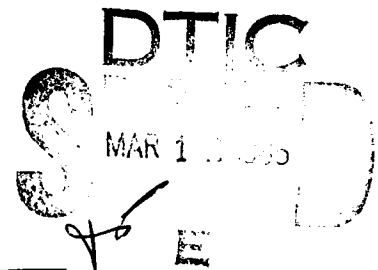
U.S. AIR FORCE COMBAT PSYCHIATRY

David R. Jones, M.D.

AD-A165 011

January 1986

Final Report for Period January 1979 - June 1985



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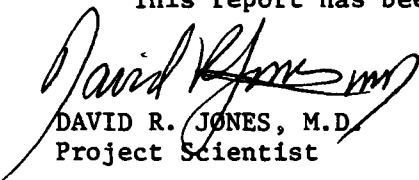
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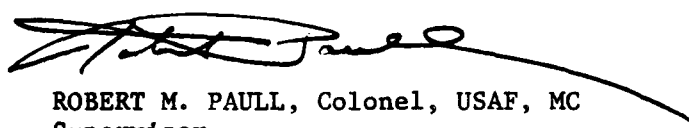
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The Office of Public Affairs has reviewed this report, and it is releasable to the National Technical Information Service, where it will be available to the general public, including foreign nationals.

This report has been reviewed and is approved for publication.



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<p>The U.S. Air Force faces the distinct possibility that its bases may be vulnerable to enemy attack. Combat fatigue may thus affect nonfliers, whereas in past conflicts fliers have been the ones affected. This report reviews the literature on the effects of combat: first on fliers, then on nonfliers. The report suggests that flight surgeons use 2 main agents of therapy, rest and the force of their personality, to delay or prevent combat fatigue in fliers. The report also discusses the relevant signs and symptoms, both in fliers and in nonfliers, and ends with a presentation of the principles of Brevity, Immediacy, Centrality, Expectancy, Proximity, and Simplicity in dealing with combat fatigue in nonfliers.</p>					
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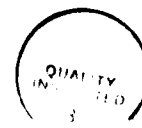
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U.S. AIR FORCE COMBAT PSYCHIATRY

INTRODUCTION

The United States Air Force (USAF) mission and its possible combat scenarios differ considerably from those of other services. Traditionally, the people at risk in the U.S. Air Force have been the fliers--the pilots, navigators, weapons systems operators (WSOs), electronics countermeasure operators, radio operators, gunners, loadmasters, flying crewchiefs, and other highly skilled and carefully selected personnel. These fliers have been the tip of the arrow, supported by the rest of the U.S. Air Force. Thus, at a 3000-man USAF base, only the 300 or so fliers might be exposed to combat. The security police are expected to provide perimeter security against small attacks involving light weapons, but the rest of the personnel on base probably have not even been issued weapons. There is no tradition of arms, little training in the use of pistols and rifles, and essentially no tactical field training in self-defense. In case of ground attack, the general response expected is for most personnel to take cover and wait while some other military service or the base's own aircraft and security police fight off the attacking enemy. Leadership training of USAF officers and noncommissioned officers (NCOs) does not address handling troops in deadly peril, and the average USAF member knows little about how to behave under attack. Few role models are available, either through tradition or in real life.

Thus, two differences come immediately into focus when comparing the USAF role to the roles of the other services:

1. In the past, the brunt of battle has been borne by a select, highly trained small group of USAF fliers, with whom the mass of troops may not be able to identify personally.
2. In the event of enemy attack, most USAF members will have to take cover and wait while others decide their fate. This passive role carries with it a particular vulnerability to combat reactions (12, 19).

We will consider separately the combat stresses borne by the fliers and by those nonflying USAF members who may have to suffer through a ground attack on the base. I will draw examples from wars of the past in order to develop and discuss future preventive and therapeutic measures to preserve the fighting strength.

SUPPORT OF FLIERS IN COMBAT

Most of the literature concerning the effects of combat stress on fliers derives from World War II; little was written on this subject during the Korean conflict, and there is essentially no psychiatric literature on the USAF experience in Southeast Asia (SEA) during the Vietnam conflict. This is a regrettable lack, for one must understand that several demographic factors have changed during the last 40 years. Fliers today differ considerably from their predecessors. The fliers in World War II were wartime volunteers, high

school graduates or college students commissioned through the aviation cadet program, trained in a specific aircraft and sent into combat with perhaps 200 flying hours altogether. Most of these fliers separated from the service after the war, having no intention of a career in military aviation. Some joined the reserves, probably thinking that they would be recalled to active duty only in the unlikely event of a national emergency.

The call came sooner than anyone expected. Many of the reservists were recalled in 1950 for the Korean conflict. This police action did not generate the sense of national unity that the World Wars had, and many reservists were quite bitter about having their lives and careers interrupted to fight in a war not linked to a clear threat to the nation. Their feelings were expressed in the sardonic song, "Here's to the Regular Air Force, they have such a wonderful plan: They call up the goddam Reservists, whenever the shit hits the fan!" Somewhat older, not as committed, and with considerably less motivation to fly, those recalled fliers became a problem because of their increased incidence of refusal to fly combat missions due to "fear of flying" (24, 34, 35). Harking back to lessons learned during World War II, flight surgeons would check such fliers to assure that they had no psychopathology, and then clear them medically for flying duties. Any further action resulting from refusal to fly was handled administratively rather than medically.

The demographic characteristics of USAF fliers have continued to change since the mid-1950s. All fliers--indeed, all officers--must have a college degree, and most obtain their commissions either through the United States Air Force Academy or through Reserve Officers' Training Corps programs. Many officers go on to obtain master's degrees after entry on active duty. This characteristic was the complexion of the force in SEA, except for a few older officers commissioned through the old aviation cadet program. These young, bright, well-educated fliers had thus spent at least 5 years (4 in college, 1 in flying training) directed toward the goal of becoming a USAF flier. Many fliers were seriously considering 20-year careers as USAF officers, and most of those who were not were hoping for careers as airline pilots. Thus they were older and better educated, and had a longer career view than their predecessors. Many were fairly "high-time" fliers when they arrived in SEA, although the younger ones might arrive with only 200 to 300 flying hours. The professional fighter pilots were a subgroup of the U.S. Air Force, a tactical cadre which rotated between SEA, the Tactical Air Command in the United States, and tactical fighter wings in U.S. Air Force, Europe (USAFE). Some of these men served 2, 3, or 4 tours in SEA.

The U.S. Air Force today has continued its policy of producing highly selected, educated, and trained pilots. Most men entering pilot training are USAF Academy graduates; the rest are ROTC officers, or college graduates entering through Officer Training School. The increasing complexity of aircraft (frequently called "weapons systems" to underline this complexity) requires continued high-grade training. Many front-line pilots, navigators, WSOs, and electronic warfare operators (EWOs) are in their 30s, and some are in their 40s. They are, as stated earlier, considerably different from their predecessors in World War II, and more like those who flew in SEA. Yet we have almost no specific data about combat reactions of fliers in SEA, or about the types of support most effective in maintaining their morale and fighting spirit. Thus, any ideas or plans for furnishing such support in a future

conflict must be based on the reports of our experiences in World War II and Korea, along with anecdotal data and reminiscences from SEA, data obtained from the performance and support of fliers from other nations in more recent conflicts, and projections of all of this information onto present USAF fliers. We must assume that principles of support to morale and flying efficiency which have been effective in a number of different circumstances are probably basic enough to prove useful when adapted to the particular circumstances of future conflicts.

U.S. Air Force fliers may fill a number of roles in a combat situation. Some tactical fighters will fly air-to-air combat missions to establish air superiority over the battlefield by attacks on enemy aircraft. Others will fly tactical air-to-ground missions, attacking enemy troop concentrations, armor, artillery, supplies, and equipment. These aircraft may be single-seat (pilot only), or may be crewed by a pilot and a WSO. Forward air controllers will coordinate these strikes and will identify targets. Reconnaissance pilots will take photographs before and after air strikes to use in planning missions and to assess damage. Tactical helicopter pilots may fly special missions, inserting or extracting troops, rescuing downed fliers, and carrying patients to the rear. Tactical transport crews will airlift supplies, delivering them from the air by parachute or by special low-altitude extraction systems, or by landing to offload in the conventional way. These and other tactical aircrew will be exposed to specific dangers: ground-based small-arms fire, surface-to-air missiles, conventional anti-aircraft fire, and attack by enemy aircraft. Tactical missions tend to be fairly short, lasting from 1 to 4 hrs, and thus the aircrew may fly 2, 3, or even 4 missions in 1 day. Israeli fighter pilots in the 1967 war, expected to fly an average of 3 or 4 sorties a day, flew an average of 7 a day; some pilots flew as many as 10 sorties (26). The dangers of such missions may be highly variable. Some are the proverbial "piece of cake," while others may be extremely lethal. At times the danger--or lack of danger--will be well known to the fliers. Other missions or target areas will be known as unpredictable, thus adding the considerable stress of uncertainty to all the other stresses of combat.

For the tactical fighter pilot, the success both of air-to-air and air-to-ground missions depends on personal skills. Dual-crewed aircraft like the F-4 integrate the WSO into the equation, but the skill of the pilot is still paramount. Whether a pilot lives or dies in this situation depends upon personal prowess to a degree which may be unique in modern warfare. Such a man must have supreme confidence in his skills, a strong narcissistic component recognized when he is selected for training. This narcissism, an almost magical sense of personal invulnerability, is nourished by the system of training that he receives, and displays itself in the "typical fighter pilot personality" which is immediately apparent to the most casual observer of human nature. This man's effectiveness in battle depends on his boldness, self-sufficiency, and internal locus of control. He may depend to some extent upon his wingman and his squadron for support, but deep in his heart he knows that he can ultimately depend only upon himself. Maintenance of this narcissism in the face of mounting losses of his friends, fliers whom he knows to be skillful and brave, to the enemy requires a healthy initial motivation to fly and strong denial mechanism to defend against these losses. Magical thinking and superstition may be observed. Deaths are briefly acknowledged and then consciously suppressed in order to continue the squadron mission.

Support of tactical fliers in the combat arena has been fairly similar during each of our last 3 wars. Airfields have been reasonably free from enemy attack in most cases, and fliers have lived in a base environment in which a great deal of effort has been devoted to their personal comfort and support. Nourishing meals available 24 hrs a day, specified crew-rest periods with exceptions granted only by higher headquarters, personal health care and welfare overseen by a squadron flight surgeon and his staff, quiet quarters which are air conditioned or heated; all these amenities and more are provided by regulation.

Transport crews will be affected by some but not all of these considerations, with added stresses deriving from their particular mission profiles. Tactical transport aircraft, particularly the C-130s and the cargo helicopters, may be used for resupply of troops and bases under fire. The resupply of the besieged Khe Sanh defenders during the Vietnam war is an example of such an endeavor. Not only the pilots' skills count here, but also those of other crewmembers and even ground crewmembers who must help offload the aircraft under fire. The stress of flying in such a large, unarmored, defenseless "sitting duck" target during the approach, landing, taxiing, offloading, takeoff and departure under fire is enormous, especially since each of these activities must take place in a location known in advance to enemy gunners, whose weapons may already be ranged and sighted in. Transport crews may be called upon to make a half-dozen or more landings during a day's missions, and vulnerability to ground fire leads to a constant state of arousal; there are only limited options to counter such fire when it occurs. Flying such missions when attack by enemy aircraft is possible will add to the strain; witness the slaughter in April 1943 when American fighters caught about 100 JU-52s carrying troops to reinforce the German Army in Tunisia, shooting down 52 of them over the Mediterranean Sea (30).

Strategic bomber crews may face different perils. Penetration of enemy defenses depends upon surprise, electronics countermeasures, such technological advances as the cruise missile, and whatever escort aircraft may be used. The venerable B-52s are neither fast nor maneuverable when compared with air-defense aircraft or with surface-to-air missiles. Presumably, their airfields will be far enough from the conflict on the ground to be safe from attack with conventional arms, vulnerable only to long-range missiles, to enemy strategic attacks, or to saboteurs.

Strategic bomber crews had the highest proportion of combat losses among fliers in 1944, 7.7/1000 hrs flown, compared to light bombers (3.4) and fighters (1.1)(25). The B-52 experience in Vietnam shows the difference in attacking areas with and without air defense. Between June 1965 and August 1973, the Strategic Air Command flew over 124,000 B-52 sorties against targets in SEA, losing 29 B-52s altogether. More than half of the losses, 17 of the 29 B-52s, occurred in only 11 days during Operation Linebacker II, when some 740 sorties were flown against targets in Hanoi and Haiphong in December 1972 (5). These B-52s were based on Guam and in Thailand, secure from enemy attack, but the cumulative and rapid losses caused considerable concern among the fliers involved. This concern manifested itself as a rapid and forceful statement up the chain of command of the need to change tactics over the target, a statement which quickly led to the needed changes (R. A. Farmer, personal communication).

In addition to the operational factors already mentioned, three other matters distinguish the care of USAF fliers in combat. One is the close relationship between the "fear of flying" syndrome, which may occur in peace as well as in wartime, and the signs and symptoms usually associated with combat fatigue. The second is the use of rest as a primary preventive and therapeutic measure. The third is the specific relationship between the fliers and the flight surgeon who is directly responsible for furnishing their preventive health measures and medical support.

"FEAR OF FLYING" AND COMBAT FATIGUE

"Fear of flying" has been called a symptom without a disease (7). "Fear of flying" was recognized early in the history of powered flight and was the subject of 2 of the 9 chapters in one of the first textbooks of aviation medicine (1). Through the years, it has had about as many synonyms as has combat fatigue itself: aeroneurosis, chronic fatigue, staleness, aviator's neurasthenia, flying phobia, and others (2). The crux of this fear appears to be that mankind has an instinctive fear of falling which is overcome to some extent during the early years of muscular development, when we learn to control our environments by our own efforts. Some youngsters conceive of flying as the ultimate mastery and power ("Put out my hand, and touched the face of God"--Magee) and thus present themselves for flying training with "I've wanted to fly for as long as I can remember"; i.e., since age 5 or so. Their early experience of power and control leads them to aviation, with its magnificent machines and its apparent mastery of time and space.

"The central unifying force through the Air Corps is the intangible yet powerful devotion to aircraft felt in different degrees by all its members. ...Planes receive an almost libidinal investment of interest. ...the aircraft became anthropomorphized... This devotion and enthusiasm for aircraft is of such a compelling force that it to some extent supercedes military discipline." (12)

Other fliers may be motivated less by such a long-lived desire than by the vision of flying as a way to enhance a career in the U.S. Air Force. In other words, motivation to fly may be largely emotional, or it may be largely cognitive. Most fliers are probably motivated by some mixture of the two, and fliers at either end of the spectrum may serve complete careers in the cockpit, honorably and well. Yet the underlying instinct to avoid heights persists. Many pilots joke about being mildly afraid of heights in the ordinary sense, yet show no carryover of this fear to flying in their aircraft. Through their desire to fly, they deny, suppress or repress their primitive anxiety about heights. "You can get killed just crossing the street" is their common response to questions about their view of the dangers of flying.

Yet the dangers are real and, with continued exposure to the world of flying, a military flier's ability to deny them is slowly eroded. "There are old pilots, and there are bold pilots," goes the old saw, "but there are no old, bold pilots." Youthful enthusiasm is tempered by maturity and the lessons of experience. "Flying is 99% boredom and 1% pure terror." The jokes and sayings reflect the realities. As youthful fliers begin to comprehend the

realities, the strength of their motivation is tested. When it is flawed, it fails early. A few fliers are driven by psychologically overdetermined factors; a need to "prove" something to someone (usually father) may be seen in some. When success is near, the primitive symbolism of succeeding (defeating father) arouses basic anxieties which interfere with successful flying, and the flier either quits, fails through "lack of adaptation," or presents with medical or psychiatric symptoms which prove disabling.

Others fail in less spectacular ways, with symptoms which are similar to the effects of combat on men. They may be restless and irritable, with nerves on edge. They may have insomnia, and sleep, when it comes, is light or fitful, disturbed by unpleasant dreams or actual nightmares. Fliers may report profound dread or apprehension about flying, with tremors, sweating, and palpitations. One may have difficulty with concentration, begin to experience airsickness, or report that he is so preoccupied with his fears that he has to concentrate on not activating his ejection seat in normal flight. His symptoms may be of disabling and phobic proportions, or they may be mild and only slightly distressing. At times, they may have begun with a specific and clearly recognized traumatic event, such as a personal close call or the crash of a friend. Other cases may begin as the accumulation of stresses finally overcomes a strong motivation to fly and the flier comes to the reluctant realization that the joy is gone from flying.

Such cases may also present as psychophysiologic disorders with no conscious recognition of the underlying anxiety. Headaches, vasovagal syncope, obscure visual problems, gastrointestinal upsets, and many other systemic complaints may be presented for diagnosis. The astute clinician may note that the chief complaint is presented in a framework of "I'd like to fly, but...", which demonstrates that the flier has linked his symptoms with a hoped-for result of not flying. This attitude distinguishes this particular flier from the other fliers who complain about being grounded or conceal symptoms, fearing that they will lose their flying status.

All this and more occurs in military flying in times of peace. U.S. Air Force doctrine calls for evaluation to determine whether medical or psychiatric disease is present. If so, medical grounding and treatment is in order. If no physical or mental disease is present, the flier is returned to his or her commander as medically cleared to fly. Further refusal to fly is handled administratively and may result in simple reassignment to ground duties (especially if the precipitating event is acknowledged to be catastrophic and the resultant fear understandable to all) or may involve adverse administrative action.

Estimates of the incidence of such cases of fear of flying (the USAF term for this symptom in the absence of psychiatric disease) are difficult, since they are not tabulated through medical channels, but the best guess is about 7 cases per year during the last decade (J. E. Touhey, personal communication). Thus, we may regard fear of flying as a peacetime paradigm for combat fatigue, admittedly on a much smaller scale. Such cases are difficult to handle in the local fishbowl environment of the squadron. In my capacity as psychiatric consultant to the USAF School of Aerospace Medicine, I receive phone calls every month from flight surgeons in the field who are wrestling with the problem of a flier--and friend--who has developed some manifestations

of fear of flying. He is not mentally ill, in which case he would be medically grounded; he has simply lost his motivation to fly and presents himself as no longer safe. Every instinct cries out against requiring someone to fly who no longer wants to do so; he will clearly be unsafe, and requiring him either to fly against his will or to face possible adverse administrative action seems the height of folly. How much more difficult, then, will it be for a flight surgeon to take similar action to require a flier to fly into combat? Yet this is exactly the kind of judgment required, to extract from each flier every possible combat mission before allowing him to step down to nonflying duties or to return to noncombat flying. Thus we must consider the role of the flight surgeon in maintaining the operational strength of the squadron.

THE USE OF REST FOR PREVENTION AND TREATMENT

As fatigue is the primary underlying pathologic process, rest is a prime restorative. Rest may be used in several ways which may be stated as "rules," if those responsible understand the need for exceptions in individual cases.

Crew Rest

Crew rest is a complicated topic that goes beyond the scope of this presentation. The major problem with research in this area derives from the lack of any agreed-upon measure of fatigue. Although many biochemical and behavioral factors have been studied in this regard, the final "gold standard" is the flier's subjective appraisal of his or her condition. Further adding to the complexity are the numerous combinations of work-rest-sleep cycles available.

Hartman (14) reviewed some of the current literature and discussed some of the differences between various kinds of missions: tactical, strategic, airlift, and ground-based control centers. I will summarize his feelings briefly.

(1) Tactical missions involve brief multiple sorties in 1 day. The special stresses include high workload environments, highly hazardous missions, acute fatigue effects (the physical results of pulling high-G loading, for instance), and rapidly cumulative chronic fatigue. Circadian factors are also involved for all-weather aircraft.

(2) Strategic missions (bombers, AWACs, tankers) may involve longer missions, in some cases extending beyond 24 hrs. Inflight work/rest cycles become a factor, as do reasonable inflight rest facilities, nutrition, and the different jobs performed by flight crew and mission crew in AWACs and command post aircraft.

(3) Airlift missions may involve multiple short sorties (tactical) or long-range missions crossing many time zones (strategic). We have more scientific information on such flights and also on the use of multiple crews for 1 aircraft. One particular problem involves "ramp-pounding," a pernicious and frustrating form of nonwork experienced while waiting for an aircraft to be loaded, repairs to be made, passengers to be rounded up, or during any of

the other factors which may delay an aircraft for minutes to hours. Circadian stresses cause a small but appreciable decrement in performance, but may be magnified by other stresses. The conventional wisdom of the several dozen studies in this area is reflected in USAF crew-rest regulations.

(4) Ground-based centers (command posts, towers, radar sites and the like) may have unique stresses based on workload, the facility itself, its location, its dangers, and other unforeseen factors.

Rayman (31) reported on a heavy flying schedule for C-130 crews during a 2-month emergency airlift. The crews flew almost 180 hrs/month (the usual limit is 125 hrs), involving 3 or 4 shuttles per day. He defined "fatigue" as cumulative effects which were not relieved by a single day's rest and "tiredness" as the acute effects which were. His practical conclusions, listed below, seem to me to be applicable to all flying circumstances, regardless of their complexities, since they derive from the subjective effect of daily stress, yet allow for a reasonably objective judgment.

(1) Understand that crew duty limitations are due to variables, and, although established by experience and precedent, may be modified by local needs. Be flexible.

(2) With good motivation and good support, crewmen can exceed normal crew-rest requirements for at least 2 months.

(3) Routine aeromedical surveillance suffices for the first month. Extra surveillance (defined as the flight surgeon meeting each crewmember before each takeoff and after each landing) is necessary after that.

(4) Assess fatigue frequently. One may do this by daily contact; occasional anonymous questionnaires; crew briefings on fatigue factors; assuring the best available crew-rest quarters, food and in-flight provisions; and establishing rapport with aircrew and supervisors.

(5) The decision to restrict a crewmember temporarily from flying because of fatigue should be made jointly by the flight surgeon, the operations officer, and the crewmember.

(6) Crewmembers should be relieved of all additional duties, so as to direct all their energies to the flying mission.

(7) Bend every effort toward flying the schedule as scheduled, avoiding needless changes, delays and excessive ramp time. Quarters near the flight line, but not so near as to cause the crews to be kept awake by the noise, cut down wasted travel time.

(8) Incentive pay for extra effort is a strong motivating factor for paramilitary flying.

Each USAF major air command has its own crew-rest regulations. Variables which contribute to these regulations include size of crews, type of aircraft, flying hours each day, hours of rest between flights, hours of nonflying duty, and hours flown per month. Needless to say, all of these factors may be waived

if the exigencies of the situation demand it, but the wise commander will consult with the flight surgeon before doing so, and the wise flight surgeon will look at the fliers on an individual basis before giving his or her advice on the subject. The difference between granting a crew-rest waiver for a single-seat fighter mission and a similar waiver for a transport mission where one pilot may take a nap in a bunk during the mission is immediately apparent, even in principle. The literature is specific, however, that one must consider more than the hours of crew-rest available. Sleep disturbances are a consistent early warning of cumulative combat stress in fliers, and so the flight surgeon must discuss the quality of their sleep with individual fliers. If sleep is disturbed by nightmares or insomnia to the point that the flier is as tired upon awakening as when he went to bed, the cumulative fatigue after 2 or 3 days may well render him ineffective at best and unsafe at worst. The British used 20 mg of temazepam (Restoril) as a hypnotic for fliers during the South Atlantic (Falklands Islands) campaign. Group Captain Michael Fisher commented:

"We were particularly impressed by a short-acting drug for ensuring our aircrews adequate sleep before flights. Very often they were having to get their sleep at unusual hours of the day under very noisy, cramped conditions. (Temazepam) is rapidly excreted, though it's rapid in its effect. People were able to sleep and wake up and go flying without any sort of hangover effect. Aircrew eventually were permitted to fly within only six hours of taking the drug." (11)

The decision to use temazepam during the South Atlantic campaign was based upon British recognition of demanding operational workloads, the need for extension of permissible flying hours, and the potential for these conditions to continue for several weeks. Their experience included transport crews logging up to 150 hrs in 24 days, with single missions lasting up to 28 hrs. Even without the use of test doses, they encountered no problems with this medication (29).

Temazepam is a short-acting benzodiazepine most active 20-40 min after oral administration, with peak effect in 2-3 hrs, and a biphasic half-life with a 30-min short peak and a 10-hr terminal half-life. Temazepam does not affect rapid eye movement (REM) sleep and somewhat decreases slow wave sleep. Although it has not been approved for use in ungrounded USAF fliers, exigencies of combat may dictate its use, or the use of a similar short-acting benzodiazepine, but only after ground testing by administration to the individual flier on a night prior to a nonflying day, in order to detect any unusual or idiosyncratic effects on the ground rather than in flight.

The Interval Between Missions

World War II flight surgeon reports generally agreed that missions should not be flown on more than 3 consecutive days (21, 32). All involved should be aware that standing alert is as wearing as flying an actual mission, if not more so, in that there is no release of anxiety through action. Further, flight surgeons reported that the period between learning about a mission and flying the mission was the most stressful. Weather holds, slipped takeoff

times and scrubbed missions were extremely nerve-wracking and, at least from the point of view of generating combat fatigue, should be counted as a mission day (21). A day off must be OFF, with no duty requirements whatsoever. Further, the flier should know about it ahead of time, so that its relaxation may be anticipated as a short-term goal. Specific recommendations for time off in the 8th Air Force area were 10-15 hrs of operational flying per week, 24 hrs of leave per week, 48 hrs of leave every 2 weeks, and 7 days of leave per 6 weeks (15). Grinker and Spiegel commented on the strength of the group identification among fliers, that there is little relaxation available to a flier on the ground if his friends--or especially his crew--are flying (12). Thus, if possible, a wing standdown will provide much more release of anxiety for fliers than will an individual day off, though the requirements of combat rarely allow such a policy. My conversations with SEA combat fliers have underscored the value of trusting the fliers' own judgment in determining when one should not fly a given mission because of fatigue. A flier in a well-run squadron may be allowed to take his name off the flying schedule every now and then without question if he regards himself as not fit to fly that day. This concept has been incorporated into a suggested program called RAINCHECK (D. Porterfield, personal communication), which may prove effective in future combat flying if it is not abused. Clearly, any flier whose overuse of such a system points to an unwillingness to do his share should be evaluated by his operations officer or flight surgeon. However, a system such as RAINCHECK, run on the honor system with minimum supervision, may be a useful way to deal with cumulative fatigue among fliers in a squadron with generally high morale. By giving a flier a bit more control, balanced by the self-policing action of a well-integrated squadron, morale may be enhanced and combat fatigue delayed.

Rest and Recreation

A prolonged combat tour should be split by a 1- to 2-week rest-and-recreation (R and R) break. Realistic flight surgeons recognized during World War II, as we did 20 years later in Vietnam, that fliers do not necessarily rest on R and R. It is wise not to schedule them to fly for 2 days after they return from R and R, but to use this period to accomplish ground training or administrative duties (15). Some fliers will object to time off, wishing to hurry through their tour and get home. If the rest causes more stress than it relieves, such a schedule may be modified a bit. In general, though, its beneficial effects will be obvious throughout the squadron.

Tour Length

The length of a combat tour is a decision which should be made by line commanders at the highest level. I discuss it here because of its immense importance to fliers' morale and its epidemiologic role in shaping the patterns of susceptibility to combat fatigue.

In World War II, the tour length for heavy and medium bomber crews depended upon the number of missions flown, with the "magic number" being predicated on giving each aircrewmember a better-than-even chance of surviving the tour. The 12th Air Force determined "the maximum effort of the average flier," essentially based upon attrition rates, to be based on a

60%-80% chance of completing a tour, if the military situation permitted (25). Attaining the desired number of missions or flying hours became a valued short-term goal for fliers, and the demoralizing effects of shifting the magic number, always upward, furnished one of the themes for the novel Catch-22 (16). The knowledge that the combat tour had a finite duration becomes more important in maintaining tolerance of the growing anxiety, and "experience repeatedly demonstrated that this factor has been responsible for many individuals achieving the expected level of operational missions. Without this certainty of relief, the ego in many instances would have succumbed much sooner, and an appreciable decrease in the number of combat missions flown by available personnel would have resulted" (23).

How long should such a tour be? The answer depends on many factors: the type and severity of the flying operation, losses to combat and accidents, the physical conditions of the bases, and the realities of the combat needs. However, once a tour is announced, it should be changed only for absolutely critical reasons and such a change should be accompanied by a responsible explanation to the fliers of the exigencies leading to the decision.

From a pragmatic point of view, a combat tour, usually measured in number of missions, should allow each flier at least a better-than-50% chance of going home in one piece. In my opinion, odds less than 50% should apply only in last-ditch efforts, as in the Philippines in 1942.

Completing a combat tour in prior wars was not without psychological and psychosomatic cost. The prolonged tension led to progressive loss of normal personality features. Aircrew became quieter, more serious and cautious, sometimes seclusive and depressed, with loss of interest in other pursuits, loss of spontaneity, and a decreased love of flying. Sleep disturbances included insomnia and nightmares, with battle scenes a frequent theme. Fliers would have little appetite for food, but their intake of coffee, cigarettes, and alcohol would increase. Their increased tension would also be manifested as irritability, jumpiness, and tremors. Fantasies of omnipotence and invulnerability would be replaced by obsessive fantasies of death and ruminations about lost friends. Physical fatigue in periods of prolonged or intense flying would accelerate this process and would lead to a clearly visible decline in the fliers' ability to fly and to fight, which the whole squadron would recognize. At this point, if not removed from operational flying, the flier would either experience such severe stress symptoms as to develop full-blown combat fatigue or might become so ineffective as to be at special risk in combat.

THE ROLE OF THE FLIGHT SURGEON

As we have discussed at length, fliers are different from other combat troops. This difference extends to their medical support, which is provided on a highly personal and individualized basis by the squadron flight surgeon. Thus, morale support and first-echelon mental health care may well be furnished by the flight surgeon rather than by enlisted medical technicians or by "buddy care" nonmedics. The flight surgeon is an intrinsic part of the squadron's internal support system and should be present on a day-to-day basis to furnish primary medical care and advise the squadron commander on matters of preventive medicine, including matters of morale.

Flight surgeons have only a few tools with which to slow the inevitable progress of combat fatigue in fliers, but these may prove to be powerful weapons if properly used. Above all, they must understand that this is a normal reaction of a normal group of men to a dreadfully abnormal situation. As a normal reaction, combat fatigue cannot be prevented or avoided, but may be delayed. The frame of reference must be, not "Does anyone in my squadron have combat fatigue?", but rather, "I must understand how each of my fliers is dealing with this stress and watch for defenses which are crumbling." With this attitude, the flight surgeon is ready to support the flying mission by helping each flier to fly as long and as effectively as possible.

Combat Flying for Flight Surgeons

The flight surgeon must fly combat missions, if at all possible. To do this is to set in motion a complex set of tried-and-true interpersonal dynamics which pay off with several specific benefits.

Understanding the Mission

Flight surgeons will understand the stresses of combat at a visceral level. By thoughtful reflections upon their own reactions, a level of understanding develops which would not otherwise be possible. Good flight surgeons identify strongly with "my" squadrons and "my" fliers. The use of the possessive pronouns is universal among such professionals. The best flight surgeons I have known have this quality. They are much like fliers in their own personalities, and yet recognize that they are not pilots, navigators, EWOs or gunners. Overidentification can lead to a prostitution of medical ethics and to fuzzy professional thinking. It can also lead flight surgeons to think that flying, rather than caring for the fliers, is their own mission. How much should a flight surgeon fly? That depends on the aircraft, the mission profiles, and the press of other duties. In general, based on my experience in Vietnam, I believe that a flight surgeon should log not less than 1 nor more than 2 missions per week during duty hours. After-hours flights should be negotiable with the squadron or wing commanders, depending upon the flight surgeon's being able to sleep normally and to be fully functional in the office.

Credibility

By flying the squadron mission, the flight surgeon establishes credibility. The fliers know that the flight surgeon flies and the flight surgeon can "speak the language" without being awkward or pretentious. More importantly, the flight surgeon can discuss personal fears, anxieties, and reactions in such a way as to give these strong and often unacknowledged feelings a legitimacy of expression. Such modeling of openness is quite healthy. A flier, terrified and ashamed of his terror, may experience considerable relief in laughing with the flight surgeon who says "I thought I was going to wet my pants on that one!", since the flier may have had precisely the same feeling but was unwilling to admit it.

Acceptance

The flight surgeon, by flying and by being accepted by the fliers as "one of us," assumes a symbolic importance within the squadron, perhaps second only to that of its command echelon. Such a flight surgeon is a confidant of the commander and the operations officer, one whose judgment is trusted. Understanding, tolerant, noncritical, realistic, yet firmly committed to the squadron goals, the flight surgeon develops an image as an important person, one whose good opinion the flier values. Giving sympathy, affection and protection to the fliers, still the flight surgeon expects of them dedication, perseverance and a willingness to continue the mission. The excellent flight surgeon does not overidentify with the squadron, does not fear their rejection (a healthy personal sense of self-esteem comes from within), and deals adaptively with personal internal conflicts between protective drives and the need to keep men flying even if some die. This requires a well-integrated personality structure, buttressed by professional skill and a strong personal value system (23).

Intercession

The flight surgeon who flies combat missions can see firsthand the reactions of the troops to real-life combat stress, can observe their discipline, sees the fliers in vivo, as it were, and can then use the information to keep the commander informed about morale. These words may look a bit cynical in print, but the matter is quite practical. As a flight surgeon with an Air Commando Wing in Vietnam, I flew with enough different crews to have a real grasp on how the fliers behaved in flight and in combat. I carefully avoided any actions that smacked of "informing" on specific fliers, but was able to keep the wing commander up to date on how well his fliers followed crew rest procedures, in-flight safety measures, and general flight discipline. Being known and trusted both by the commander and the fliers, I was able to explain and interpret each to the other, informally and nonthreateningly. I represented a way by which petty gripes and problems could be taken outside the chain of command to the one who could fix things, in matters which might have led to hard feelings if official action had been necessary. The credible flight surgeon thus may become a sort of ombudsman within the squadron and the wing, able to get things done which need to be done, and to interpret--and occasionally to soften--policies imposed from above. Such an outlet, serving also as a safety valve, may contribute considerably to the fliers' morale.

Ventilation, Observation and Early Intervention

In common with fighting men in other situations, some psychological relief may be afforded aircrew by allowing them to ventilate after missions and by group supportive activities. These functions are served to some extent by the intelligence debriefing that takes place after combat missions for fighters and bomber crews, and by the natural tendency of crews to gather at the bar at the end of a day's flying. Again, excessive drinking is a danger to be guarded against, but such activities in moderation have a cathartic and mutually supportive role for the squadron and are of real value in the world of the flier. If conditions allow, an intramural sports program (softball,

volleyball) has a similar value, as well as serving as a physical outlet. Such activities must be voluntary, however.

The flight surgeon may also keep in touch with the reactions of individual fliers to the combat situation. Any group of fliers reflects the strain of combat, and the flight surgeon will have to become acquainted with the ways that fliers show the strain. Most of the literature on combat fatigue speaks of the effects of war on infantrymen who are exposed to death for days, weeks, or months at a time, without letup. The flier goes on a mission, faces death, sees comrades die at a distance (or, rarely, on the same aircraft), and returns to a safe environment.

The ego of the flier uses various strategies to cope with the stress of combat. These strategies are familiar to us from the peacetime environment, but are generally discussed only in the context of psychopathology, rather than as useful adaptive mechanisms. During the prolonged combat tours of World War II, flight surgeons became familiar with a pattern of coping mechanisms in fliers progressing through their tours. Ignorance of the realities of combat protected the fliers' egos against fear at first, because their perceptions of dangers were only intellectual and theoretical. This attitude would disappear after a few flights, as the realities intruded. Fliers might feel some anxiety, but the continued flying, the acquisition of combat survival skills, and the reassurance of peers and of the flight surgeon would generally suffice to keep the anxiety tolerable. Successful aggressive action against the enemy served as a powerful way to discharge anxiety, and helped the flier maintain some sense of control over the flying environment.

The individual aircrew member would identify strongly with a unit or with his crew (a small group of men to whom he might ascribe almost magical powers) or even with a single flier. Similarly, some would identify strongly with an aircraft as a powerful and deadly champion. It was but a short step to superstitions about flying as magical defenses: "lucky" items, rituals, and so forth. Freedom from anxiety in flight depended upon the fantasy of the aircraft as safe and upon a flier's identification with its strength and invulnerability. Fliers also identified with leaders and with particularly skillful comrades. Such identification might be badly shaken if an accident or combat loss claimed these magical objects, since the identification was now with a wounded or dead person, rather than with an invincible, potent one. Some magical feeling of immunity and omnipotence would also help carry him along, strengthening his ego's defenses against reality, since many elements in aerial warfare are truly beyond anyone's ability to control (12). Denial of these realities ("They'll never get me") would bolster such magical fantasies for awhile, but the accumulation of combat experience would gradually eat away this fantasied invulnerability and the ego would begin to lose its power to protect itself against crippling anxiety.

"Not one man in a hundred looked forward to an operation with relish, although most of them derived considerable satisfaction from doing an operation well and returning safely...all that most aircrew wanted after furnishing their reports was breakfast and bed and sleep. They did not remember vividly every detail of all their operations, but they were conscious of no urgent desire to forget them. ...Their attitude to losses and the

death of friends was particularly striking; it was one of supreme realism, of matter-of-fact acceptance of what everyone knew perfectly well was inevitable. They did not plunge into outspoken expression of their feelings, nor did they display any compromise with conventional reticence about violent death. They said "Too bad...sorry about so-and-so...rotten luck." Their regret was deep and sincere, but not much displayed or long endured. They were apt and able to talk of dead and missing friends, before mentioning their fate, just as they talked of anyone else or of themselves. It took the loss of particular friends or leaders, flight commanders or squadron commanders to produce a marked reaction among a squadron. Then they might feel collectively distressed, have a few drinks because of that, go on a party and feel better." (36)

These words were written about British night bomber crews in World War II, but they apply just as well to the Air Commandos (now Special Operations) and tactical fighter pilots with whom I worked in Vietnam. The men had seen friends die in aircraft accidents before the war, and combat losses were regarded in much the same light. There was some corporate acknowledgment of those who were killed, but relatively little grief was expressed. Spontaneous expressions of anger or acute grief at the loss were heard as the news was delivered, and then the old mechanisms of denial, intellectualization, rationalization, altruism, humor, and magical thinking reasserted themselves and the loss was thenceforth discussed more coolly. Toasts might be drunk in the bar; a few (but by no means all) of the squadron would attend a memorial service; and the war went on. Symonds (37) speaks of the mental state ("confidence") which carries a man through such experiences, ascribing it to a blend of resolution, bravery, and frankness. As frankness ebbs (as reality intrudes), bravery and resolution to see the job through keep the flier going.

One F-105 pilot remembers a conversation with a friend in which they briefly discussed the otherwise unspeakable fear.

"How do you do it, Ed?" I asked.
"What, Geno?"
"Hell. We brief and go to the airplanes; you could be on your way to the 7-11..."
"It's an act," Cappy said.
"You..."
"I'm scared spitless."
"Hm." I took a drink.
"You let it out one time, and it can get to you..."
"God, that makes me feel better. A lot of the time, I've got a bowling ball in my stomach..."
"It doesn't show, though." He looked at me.
"Those young guys..." He waved. "...they've got to follow us." (3)

Still, fliers did, and will, break down in combat. A number of authors in World War II and Korea comment on a pattern that we may expect to see in

future aerial conflicts (12, 21, 24, 36, 37). There will be a few fliers who suffer disabling symptoms of anxiety early in their combat flying (Group A). A few of these fliers may be returned to flying, but most seem not to have the capacity to tolerate combat flying and may need to be relieved from duty. These fliers may represent the USAF equivalent of the Army's early breakdowns among men with immature, dependent, or other maladaptive personality structures (F. D. Jones, personal communication). Other cases of combat fatigue tend to occur in 2 clusters: toward mid-tour (Group B), and as the tour nears its end (Group C). Finally, there will be a scattering of fliers who undergo extremely stressful events, who then break down in consequence (Group D). Such events may be scattered throughout the tour. Stafford-Clark and Symonds (36, 37) concur that the prognosis is poor for Groups A and D, and better for Groups B and C.

Some of the fliers in Group A are described in terms which today would place them among those having antisocial personality traits: lack of allegiance to others than themselves and little regard for the social conventions or expectations of the squadrons. One would hope that most potential fliers with such personalities have been detected and eliminated by the preselection interview with the flight surgeon, the Adaptability Rating for Military Aviation (ARMA). If not, such fliers may show their true colors during the extensive flying training and combat crew training process, or by their behavior in squadron operations during peacetime. Failing that, there is no way to treat such an ingrown personality pattern, and these fliers must be administratively eliminated from flying status if they are detected. It is axiomatic in the U.S. Air Force that it is impossible to predict who will do well in combat and who will not, until they are actually exposed to enemy fire. Some men may not be conflicted about flying when it is dangerous and are unambiguous in their refusal to fly combat missions. They may even express their surprise that no one understands their feelings and excuses them. Appeals to duty, to squadron or personal loyalty, or to pride will have no effect. Such men must be grounded in disgrace by their commanders. The wise flight surgeon will counsel administrative authorities that, if such men are not punished, they should at least not be rewarded by being given a job seen as desirable by squadron members as a consequence of being administratively grounded.

Whether combat fatigue occurs early in the tour or toward its midpoint, the first contact of the anxious flier will be with the flight surgeon, who certainly does not need to be a psychiatrist to deal with most such cases. The flier may come in of his own accord, or the flight surgeon may have noted the classic early symptoms: gradual withdrawal from social contact, loss of sense of humor, lack of spontaneity, passivity leading to moroseness, the onset of multiple complaints of vague symptoms which would hitherto have been ignored or even hidden from the flight surgeon to avoid grounding, and diminished energy and appetite. Later symptoms will almost certainly include irritability; increased use of cigarettes, coffee, and alcohol (which obviously makes things worse); digestive disturbances; weight loss; insomnia; and the disturbance of sleep by bad dreams or frank nightmares. The flier may develop tics, frank tremors, or an increased startle reaction. Further symptoms of anxiety, depression, and psychophysiological reactions will be superimposed on these symptoms if matters are not corrected.

The best early intervention is to talk things over privately with the troubled flier. Whether the interview is initiated by the flier, flight

surgeon or squadron commander, the flight surgeon should take the role of a sympathetic and concerned counselor who wishes to help the flier regain his composure and return to the cockpit, once more fully effective. Thus the flight surgeon supports that part of the conflicted flier which wants to return to effective duty. How long does he feel that he has been below par? Does he feel it is due to a particular event, or to an accumulation of things?

If an accident or a particular mission is on his mind, let him ventilate. What was he doing? Where? When? Then what happened? How did he react? How did others react? How does he think he should have reacted? What is he telling himself now about the whole thing?

If it was cumulative stress, how has it affected him? What is he afraid of? How does he see others reacting to the situation? How do they react to him? How much does he feel a part of the group and how much ego support does he derive from them and from the leaders? At times one may encounter marked misperceptions about how others feel, how they handle things, and how "I have let them down."

In each case, the flight surgeon can serve to reflect the reality of the situations involved, specifically correcting misapprehensions, clarifying the flier's status in the squadron, and helping to strengthen the ways in which the flier has dealt with the stress thus far. An understanding, noncritical, tolerant acceptance and explanation of the flier's anxieties (unrealistic) and fears (realistic) is essential, so that the flight surgeon then assumes a warm but firm parental role which allows for sympathy, affection and protection while expecting and demanding the utmost dedication to the mission, to the point of possible self-sacrifice. By allowing the flier to talk about his anxiety, especially if it is manifested through psychophysiological mechanisms, the flight surgeon may help clarify that which the flier really fears, rather than dealing through a smokescreen of symptoms and vague apprehensions. Talking also allows the flier to deal realistically with his fear of being afraid, which he may have perceived as a strong taboo within a "macho" squadron. When the flight surgeon accepts and defines this fear as natural and universal, the flier's tendency to view it as an unnatural, exaggerated personal failing may be corrected. Thus he reassures himself that he is normal and that if his squadron mates are dealing with similar feelings and yet can continue to function, so can he. Reassurance, accepting support, and firm encouragement to return to duty will strengthen his ego and help him deal with the doubts, self-criticisms and guilt with which his superego may be taxing him about his not being the perfect flier. Remembering that the flier is conflicted (or else he would have quit long ago!) will help the flight surgeon deal with personal uncertainties about such a therapeutic approach. Then, too, it is important for the flight surgeon to have flown some combat missions if at all possible, so as to have dealt personally with the realities involved, and to assume credibility in the eyes of the squadron.

From a psychodynamic point of view, the squadron may come to regard the flight surgeon as a powerful, protective parental figure and, through a transference relationship, will wish to retain the flight surgeon's approval by making continued efforts and sacrifices. Gratification of the need for approval by the flight surgeon may do much to relieve anxiety, particularly in the more passive or dependent members of the squadron; the amount of positive feedback obviously varies from man to man (22, 23).

At a deeper level, an individualized psychotherapeutic technique must be used. This technique may be performed by some particularly adept flight surgeons, or may require the services of more skilled psychotherapists. Uncovering therapy will help aircrew members express their honest fears; they frequently lack insight into their own apprehensions. The insight gained may be only intellectual, but even expressing it verbally gives the emotion legitimacy, and the flier may be relieved by no longer being afraid, unwilling to acknowledge emotions he regards as unworthy. The more he can express anxiety verbally, the less he may have to express it physiologically or psychosomatically, and thus he is relieved of the added fear of bodily disease. "The ego, weakened and shaken by anxiety, needs strong and repeated doses of reassurance, support and encouragement. ... (M)any men despise and often condemn fear as unmanly and cowardly, and therefore suppress or repress their own, out of guilt or the hurt to self-esteem. These superego tensions must be relieved by appropriate explanations" (23). If fears are already conscious, uncovering is not necessary; ventilation and reassurance may suffice.

Should the flier be unwilling to tolerate his fears or his somatic concerns, he may respond to an appeal to his pride and conscience by confronting him with the obvious secondary gains and by using the transference relationship with the flight surgeon and squadron for leverage. This relationship may be tempered by simultaneously gratifying dependency needs by allowing extra time or a special system of appointments after missions. In the case of fliers who attempt to compensate for these needs by denying them and rejecting proffered help, an especially sensitive and tactful approach may be necessary. The therapist may encounter displaced hostility, especially if morale in the squadron is low. This symptom may need to be interpreted to the flier thusly: "I know things are bad in the squadron, and I know you're unhappy with them. Still, we've got a mission, and you're not really sick and don't need to be grounded. I know you can fly and I'll be willing to check you over after every flight to be sure nothing else is going wrong with you. This tension gets to everybody, but I know you can gut it out for a while longer."

Levy (23), whose approach I have paraphrased, noted that no one had good statistics on what went on within the squadrons. He felt that about 40% of medical/operational failures were primarily psychological, and that about half of these failures occurred in the first 10 missions. He went on to point out, as do all authorities, that all fliers would finally break down if not eventually relieved from duty.

Capt Robert Rehm (32) carried his interest in the progression of responses to combat stress beyond that of most flight surgeons. After a year as a flight surgeon in Italy, he felt that he had merely scratched the surface in dealing with his fliers' psychological problems, and so he undertook to "engage in an average combat tour, flying regularly as a crewmember." He does not specify, but I surmise that he was assigned to a B-24 heavy bomber squadron. He reports various common psychologic factors in 3 segments (the first 10 missions, the subsequent 30, and the final 10) during his 50-mission experience. He expresses certainty that "The anxiety is greatest during the first 10 missions over the target," especially when the new flier is confronted with serious occurrences, such as flak wounds, aircraft damage, or witnessing the loss of another aircraft. Such a "mild catastrophic event" (!) will shake the resolve of unaggressive aviators. Capt Rehm states that he

found it necessary to take a firm attitude and not to leave the decision to continue flying up to the flier, but to explain--repeatedly, if need be--that he had no medical reason to ground the flier, who must continue to fly. Such a firm stance was usually effective.

During his own tour, Capt Rehm describes mostly short and rather easy missions at first, with some exhilaration at actually being in combat and taking some flak hits. However, a near crash on takeoff laid the basis for a later phobia; he preferred to sit where he could not see the ground on takeoffs. One such episode was not sufficient to keep him anxious, but an accumulation of similar phobias could become disabling.

After his first 10 missions, he found that the excitement was subsiding as familiarity increased. The many novel experiences were now accepted as routine, given that no truly catastrophic event occurred. He was aware of feeling less alone in the aircraft and more homogeneous with the other crewmembers. The war was no longer a personal matter between him and the enemy, but the cooperative effort of a force of which he was a part. He also felt a growing blind faith in his pilot, something quite common in his squadron. "All the dangers which have been safely encountered and surmounted are epitomized in that particular pilot. He stands as a tribute to experience and a symbol of their safety." This statement clearly delineates the identification with the pilot and the magical powers attributed to him by an ego defending itself against reality.

As the second period progressed, Capt Rehm describes his emotional plateau as being able to relax over friendly territory and more nervous in the briefing for a bad target (Ploesti, for example) than during the actual mission. After seeing one of their planes shot down, he became somewhat anxious and was insomniac for a few nights. However, his assurance reasserted itself when all went well on subsequent flights.

He comments here on the importance of keeping men flying regularly, "regardless of unusual or catastrophic episodes. (I) returned a man to duty as soon as physically able, following any injuries which he has sustained. The longer he has to think about his injuries and how they occurred, the more the mental 'gremlins' play on his emotional stability." He experienced the effects of a long standdown after his 35th mission, just after seeing a plane crash and burn on takeoff, when bad weather grounded the squadron for 10 days. This exacerbated his growing fear of takeoffs, which was relieved only when a trusted pilot had him sit on the flight deck during takeoff and explained how little danger they were in once takeoff speed was attained. (This explanation is, of course, somewhat irrational when we consider that Capt Rehm had, in 35 rides, seen 2 planes crash and burn on takeoff. One sees how the weight of reassurance from a valued authority transcends logic.) The flight surgeon must understand that a flier who is conflicted about continuing to fly is just that, conflicted. That part of him which wants to fly will seize on any information from a valued figure, such as the flight surgeon, as an excuse to return to what he knows he should be doing anyway. Flight surgeons must never underestimate their power in such instances, even though they understand the irrationality involved.

At about this point in a combat tour, Capt Rehm comments upon the "benign hypochondria" in many fliers who develop vague somatic symptoms, some real,

such as head colds, some not. Wise flight surgeons will not overemphasize the importance of such symptoms by initiating "junior medical student" workups for minor complaints, sometimes thereby attempting to exorcise their own anxieties. In others, Capt Rehm observed overuse of alcohol and tobacco, irritability, insomnia, nervousness and temper outbursts. As he began his last 10 missions, his comments can be directly quoted:

"I realized how all important the factor of physical fatigue was. I became nervous and irritable and I had a great deal of trouble controlling my emotions. I had little zest for the squadron activities. My appetite decreased materially and I noted that during the past two and one-half months my weight had dropped from 178 pounds to 156 pounds. I found that I was smoking two packs of cigarettes daily instead of one. The most noticeable factor was my inability to sleep, especially before each mission. This was most marked on the event of my fiftieth mission. Missions to (various targets) were met and completed with much trepidation. The easier missions...gave much relief but seemed much more hazardous than formerly. However, throughout this entire period, the interest and encouragement of the men in the squadron and group spurred me on to greater efforts than before." (32)

As combat flying draws to a close, several changes may be noted. Jones (18) speaks of the "short-timer's syndrome" in soldiers, a mixture of mild anxiety and phobic symptoms near the end of a fixed one-year tour. Some commanders kept men off tough patrols and assignments during their last month, which unfortunately tended to move the onset of the symptoms to the 11th month rather than the 12th. Thus, the division psychiatrist discouraged this policy, in order to maintain consistency in all units and to avoid premature onset of symptoms.

Basel (3) describes a similar approach, used at an F-105 ("Thud") base, which tends to corroborate Jones' opinion.

"One Hundred Missions was the goal. We marked them on our hats religiously, each one a step toward home. The first 10 marks were won in relatively safe places like Mu Gia Pass in Pak One or Dien Bien Phu in Pak Five.

The theory was, a new pilot should have time to adjust to the concept of being blown away by a real enemy bullet. He was given 10 missions to think about it. In reality, 10 missions was not enough, 100 missions was not enough. But, being a qualified combat pilot didn't prepare the man for the shock of what Pak Six had to offer. It was well that he had time to learn the jargon, the people he was to fly with and the control agencies he would have to deal with before entering the realm of Pak Six.

I'm not sure anyone really adjusted; most of us just slipped into a sort of calm resignation to the

inevitable. It didn't take but a few missions to realize, this was war, war of an intensity that guaranteed injury or death...

"Ain't no way." I could see it in their eyes, the "older" ones. It just wasn't that big of a deal to be dead. Once that was established, the job was much easier.

New priorities shuffled around with the old: numbers became jumbled, then lined up in a new order. It was necessity, reality barging in...

The counting of missions was important to us, like the score of a ball game, only more vital...

After X number of missions, human nature being what it is, the pilot suddenly realizes he has made it this far alive, and it seems that there is indeed a chance that life may be possible. It becomes utterly priceless again, and the Warrior becomes a Candy-Ass. He starts planning to survive the terminal disease of war, and his courage leaves him. He is now vulnerable and a hazard to himself and his compatriots.

The bosses recognized this phenomenon, and declared the number 90 as "Golden." After reaching 90, you went only to the easy ones again.

The Numbers Game didn't work well. Each man established his own time of usefulness, and most based it on the number 90, I think, instead of 100. So, you see, it could have been an endless thing.

There were some pilots that didn't adjust at all. They lived a pure hell through all 100 missions. Their courage is greater than that recorded about heroes. Certain they are going to die, acknowledging the fact that they were unable to view themselves with proportion, to see insignificance in their own lives and to accept their own death on reasonable terms, they flew every day, and did the job.

The majority of the pilots who flew the Thud into North Vietnam were reasonable, sensible people, capable of feats above and beyond--if crowded--but possessed of a healthy fear that accelerated the mind and aided in the sane completion of the mission.

I like to think I was one of those."

I saw two sorts of reactions in fliers. The first was a tendency to "beat up the sky" on the last mission, a tendency which resulted in some unnecessary losses from enemy fire or from crashes. One squadron adopted the policy of suddenly announcing to a flier "That was your last mission--turn in your gear" about 10 days before the end of the tour.

The second reaction was to become progressively cautious and super-safe, which at times resulted in mission ineffectiveness. This reaction may represent the flying equivalent of short-timer's syndrome. If so, I agree with my Army colleague's approach, which is to advise the commander not to make special allowances for a flier near the end of his tour, in order to avoid giving a secondary gain to the natural tendency to let down right at the end.

Any person, flier or nonflier, needs a chance to debrief and "decompress" at the end of a combat experience. This process should be led in a sympathetic setting by a knowledgeable practitioner. Ideally, the squadron could undergo the process together, giving all a chance to achieve closure on matters of self-esteem, of group validation of individuals' performances, and of an agreed-upon remembrance of how things were. This process should be formalized by such elements as a memorial service for lost comrades and a military parade, with awards and decorations, and a casing of the colors. Ratification of the worthiness of one's service by a valued authority is a powerful antidote for a stressful experience, which may be used to balance the doubts and emotional reactions yet to come.

In summary, plans for dealing with combat fatigue in fliers must be based on experiences of flight surgeons and psychiatrists in past wars, with the clear caveat that conditions in future wars may be quite different. Flight surgeons must understand the basic principles underlying the prevention, or at least the delay, of combat fatigue, and must use their 2 major therapeutic modalities wisely: (1) the judicious prescription of rest as a palliative and restorative, and (2) their own influence in sympathetic yet authoritative roles which offer understanding while expecting faithful service.

Psychiatrists to whom flight surgeons refer fliers must also understand these principles, and must take care not to preempt the role of the flight surgeon nor to belittle or ignore the need for coordination in decisions regarding flying status.

SUPPORT OF NONFLYING USAF PERSONNEL IN COMBAT

Prophylaxis and Early Treatment

U.S. Air Force doctrine currently calls for 4 echelons of medical care in combat situations. The first echelon (1-E) consists of care given before a physician becomes involved: preventive measures, first aid, buddy care, and the attention given by enlisted medical personnel. The second echelon (2-E) is the first care given by a physician, perhaps in a base medical facility or in one located just off-base. Third echelon (3-E) care is given in a larger medical facility (250 to 300 beds) located well off-base, either in a pre-sited hospital or in a transportable hospital brought in by air or by truck. The fourth echelon (4-E) facilities are larger still, and are located well away from the primary battle zone. From these hospitals, patients requiring long-term care will be evacuated back to the United States.

By the nature of these facilities, psychiatric care at the 3-E and 4-E level will be given by specialists. My presentation is primarily intended for nonspecialists and thus will deal almost exclusively with the 1-E and 2-E care.

As mentioned in the introduction, we have little historical information on the effects of combat upon the support troops who make up the majority of any USAF base population. One may reasonably assume that the particular vulnerability to stress found in the U.S. Army support troops would apply here also. Sir Winston Churchill once said, "Few things in life are as exhilarating as being shot at and missed," but the more common experience seems to be

"Few things in life are as stressful as being shot at and not being able to shoot back."

Consider the situation of an overseas USAF base under conditions of impending combat. Many of the troops are married and live off-base with their families. As tensions have escalated, some have sent their families home, but most have not. Whether we like it or not, ordering a general evacuation of dependents has military and diplomatic implications. What would we think if the Soviet military ordered its dependents out of Poland? To those involved, the order to send families home may seem dangerously slow. Thus, we might speculate about a scenario in which, after a period of diplomatic deterioration, dependents are rather suddenly ordered to return to the continental United States with one suitcase apiece. Pets are given away or are turned loose in the streets. U.S. Air Force troops are ordered to move onto the base and are doubled- and tripled-up in the dormitories. Household goods are left behind, possibly to be looted. Because of "MINIMIZE," little communication is possible between military members and their evacuated families, leading to concern about their whereabouts and their ultimate living arrangements. The troops may thus project their own anxieties onto their absent families and experience inappropriate concern about them. In such an instance, or in other circumstances easily imagined, our troops would begin their combat experience already considerably stressed.

These troops might then come under attack by enemy air and land forces. There is little precedent in today's U.S. Air Force for a line chief to tell his armament troops, "You have to upload that F-4 right now! I know there's persistent nerve gas around, but all of you have your chemical assemblages on. We fixed up the rips the best we could with plastic tape. If any of you get gas symptoms, try to get back here. The rest of you will have to keep uploading the plane, so don't stop to help each other. We have to get that plane off before they hit us again!" Grinker and Spiegel (12) describe similar stress on ground maintenance troops in North Africa who came under attack by German fighters.

"Especially in the early days of the Tunisian campaign, although the forward airfields were constantly patrolled by the fighter aircraft, these were no match for enemy aircraft coming in considerable numbers. The planes appear from nowhere, announcing their presence by the spatter of machine gun bullets and the thump of explosive cannon shells. They appear mysteriously, almost magically, flying out of the sun in the early morning, or diving from behind a cloud to lay a string of bombs throughout the dispersal area. One minute all is peaceful, a scene of quiet, busy activity. There may be a roar of motors in the air, but that is the normal state over an airfield. The next minute enemy fighter planes are buzzing the field, bullets kick up dirt all about, and the tremendous crump of exploding bombs deafens the ears. There is no time to look for shelter, hardly time to put on a helmet--nothing to do but lie flat on the ground and hope for the best. The ack-ack batteries contribute to the general noise and confusion--ineffectively

in most instances, because the planes usually come in too low and too fast for effective anti-aircraft fire. In no time at all, the enemy planes are gone, leaving behind them a few twisted, burning planes, a few injuries and deaths, and a number of incipient anxiety states.

Because in this kind of attack the ego has actually no time for defensive activity, its helplessness is real and actual. There is nothing in the environment which can be used to anticipate the approach of danger. Under such circumstances, any stimuli, any loud noise, even the roar of aircraft motors, may actually mean the beginning of an attack. Inhibition of anxiety becomes increasingly difficult. When enemy attacks become incessant, almost everyone on the field develops some degree of free-floating anxiety. The development of the symptoms of neurosis, aside from those of anxiety, in this situation, is directly dependent on the capacity of the individual ego to tolerate free anxiety."

What can we do today to prepare for such stresses tomorrow? What should we do as the war begins? General preparation should include attention to education, training, group cohesion, morale, and sleep discipline, as well as to other elements leading to improved or prolonged combat effectiveness. Let us consider these preventive measures individually. They serve as prophylaxis and, in a sense, as early treatment measures at the I-E level of medical care.

First-Echelon Measures

Education and Training

The medical officer on base who is most knowledgeable in such matters must be sure that all officers and senior NCOs understand the basic message of this presentation, that they will have to deal with acute stress reactions on the first day of combat and that more chronic combat fatigue will inevitably build as time goes on. They must understand that they should take preventive measures before and during the conflict. These lessons should be taught by mental health professionals if possible, and if not, by the senior flight surgeon.

This information must be transmitted down through the ranks to the working level. Leaders should tell their troops ahead of time as much about the combat conditions as possible. They may want to say that it is almost certain that everyone, themselves included, will be afraid, and that it is normal to experience the physical manifestations of that fear. They must expect dry mouths, sweaty palms, palpitations, rapid heartbeats, breathlessness, stomach flutters, and perhaps even nausea and vomiting, urinary frequency or diarrhea. They will surely be tremulous. All these symptoms are to be expected, as is a realization of their fear about what is about to happen. Leaders must also make it clear that they expect all of their troops to do their jobs in spite of their fears and to help each other out. In a phrase, "It is all right to feel afraid, and your body may let you know that it feels

the fear, but you must not let that fear keep you from doing your duty." This may be compared to an athletic contest in which the players know they are nervous and yet go into the game to do the best they can, knowing that they will lose much of the tension as soon as the first contact is made. At that point, they will revert to the skills that they have worked so long to acquire.

By discussing their feelings ahead of time, each man and woman will know that he or she is not the only one who is aware of being afraid, not the only coward in a band of heroes. Each will know that it is all right to feel fear, as long as each performs assigned duties when the time comes for action. A poll of infantry veterans (9) has shown that, prior to battle, 69% were aware of a racing, pounding pulse; 45% had sweaty palms; 15% had cold sweats; and a lesser percentage felt faint, were nauseated or vomited, or had strong urinary or defecation urges. Most of these men were aware of the physical symptoms of fear before they were aware of the emotion which caused them!

This poll also emphasized the importance of the control of behavior in action. Of the infantrymen surveyed, 94% said that seeing others act calmly under fire helped them to feel better and act better themselves. Many found that concentrating on their own duties helped, as did cracking jokes about the situation. Some 97% said that knowing morale was high in their unit made them better soldiers.

All the troops must understand the importance of the unit mission and must know how their own work helps the unit achieve its goals. They must understand how they fit into the big picture and why that picture is important, or they will certainly not risk their lives to do what must be done. More concretely, they must understand exactly what they are to do under attack, whether by land or air, by conventional, chemical or nuclear means. Warnings and all-clears must be crystal clear, to avoid unnecessary or panicky decisions. All concerned should understand that people tend to regress in their behavior when under acute stress, and simple rote performance of duty may see them through until they become more accustomed to it. Actions to be taken under attack should be rehearsed so as to be well-nigh automatic. As noted, the knowledge that training is excellent and that readiness is high is a powerful antidote to fear in combat and may help prevent many instances of acute combat stress reactions.

In point of fact, if one regards the desired outcome of a battle or an attack as the transformation of a disciplined and effective enemy military force into a disorganized and powerless rabble ["Inside every army is a crowd struggling to get out" (20)], then this issue of performance of duty under attack becomes the proper focus of all military training. People in combat roles on air bases must understand that failure to do their work under the conditions of noise, smoke, confusion, death and destruction, which have accompanied warfare since the invention of gunpowder, will result in defeat. As different as battles and warfare have become in our age from those of the past, what they retain is the human element:

"...the behavior of men struggling to reconcile their instinct for self-preservation, their sense of honour and the achievement of some aim over which other men are ready to kill them. The study of battle is therefore

always a study of fear and usually of courage; always of leadership, usually of obedience; always of compulsion, sometimes of insubordination; always of anxiety, sometimes of elation or catharsis; always of uncertainty and doubt, misinformation and misapprehension, usually also of faith and sometimes of vision; always of violence, sometimes also of cruelty, self-sacrifice, compassion; above all, it is always a study of solidarity and usually also of disintegration--for it is toward disintegration of human groups that battle is directed." (20)

Understanding these elements of battle, the wise physician, who has the commander's ear, will assure that everyone within the command understands them also. It is a message seldom heard in the peacetime U.S. Air Force, and then heard only faintly. Much in battle is sociologic and psychologic, and those who understand these factors and can communicate them to the troops in a manner that is understandable and memorable may have much to do with winning.

With this background, the junior officers and senior NCOs should get into the habit of having small "how-goes-it" sessions to assure that everyone gets "the word" at the working level. Hocking (17) comments that an excellent indicator of good morale among troops is the liberty felt by their officers to tell the truth in times of difficulty or failure. Tempering the truth is a sign of distrust of the troops, and is an attempt to manipulate morale from the outside. As such, it is immediately suspect. Morale is a state of faith between the leaders and the troops and must not be abused. If one does not know what the situation is, one should say so and do everything possible to discover what it is, rather than lying about it. Faith, once betrayed, is almost impossible to reestablish. Troops who know the truth, and know that they know it, are much better prepared to deal with it than those from whom it has been concealed.

Group Cohesion and Morale

At the lowest unit level, a buddy system (the British call it "battle friends") should be established whereby pairs of troops are specifically instructed to look after each other. This system should reflect natural friendships whenever possible, rather than being imposed from above. Thus, each person is aware that there is another person who will be specifically looking out for his or her welfare when things get rough, that no one will be forgotten or unaccounted for. As a corollary, each unit should maintain small group integrity, so that individual bonds and loyalties are not arbitrarily disrupted. Such small groups should be together off-duty as well as on, so as to foster their interdependence. Working groups should live together in barracks or shelters, rather than being split up as sometimes occurs in peacetime living. This point was recently reemphasized by Manning and Ingraham (27), who surveyed U.S. Army units to establish some of the bases for unit cohesion. One element, usually missing but of inestimable value when present, was the presence of commanders or senior NCOs in after-duty, informal settings if they felt socially at ease doing so. By so doing, they shared experiences other than those of the workplace. "The more people, the more varied the settings, and the more time the group maintains stable membership, the more the members have in common and the higher the resultant cohesion."

They close with a quotation from S.L.A. Marshall: "The good company has no place for an officer who would rather be right than be loved, for the time will quickly come when he walks alone, and in battle no man may succeed in solitude."

Skillful Leadership

The small unit leader must be familiar enough with the troops to recognize when an individual's stress symptoms are getting out of hand. The leader should be willing to give a little extra rest and time off to one whose fears are beginning to get the best of him. In his book Fighting Spirit, Maj Gen F. W. Richardson, a retired British Army physician, discusses the here-and-now treatment of acute combat stress reactions. Two hundred yards behind the battle line he had established

"a sheltered rest station...at the bottom of the hill... (S)omeone had given this place the name of 'Tranquility House'. Once its value had been clearly recognized and the...medical officers instructed about the early handling of cases of threatened breakdown, it was enough for them to mark men's field medical cards 'T.H.'. After 12 to 24 hours of rest and hot meals at this post, many men, who might otherwise have had to be sent to hospital, were able to rejoin their units...without loss of face." (33)

Such an arrangement may or may not involve a medical professional, but the circumstances described certainly should not involve a formal admission in the medical sense, which would reinforce the "sick" role. The message should be "You're not sick and you're certainly not a coward; you're just worn out and need a bit of rest before you go back to duty."

Obviously, medical advisors should assure that officers and NCOs understand the early symptoms of combat fatigue, those at the mild end of the spectrum which might otherwise be ignored: insomnia, nightmares, restlessness, decreased appetite, irritability, increased startle reflex, decreased efficiency, increased smoking or drinking, loss of sense of humor, and changes in normal temperament beyond those which are taking place in the unit as a whole. Men showing these symptoms should, if possible, be given a little extra time off, or at least the opportunity for a good night's sleep. A little consideration in these matters may go a long way in prolonging the efficiency of the unit, as well as its individual members' ability to function well.

Richardson goes on to report that hundreds of British soldiers were sent out of battle in World War II by their officers because they were showing physical signs of fear. This practice not only was a waste of manpower, but had the potential for a snowball reaction among the troops not yet affected, to whom the secondary gain for the symptoms was all too clear. He points out the clear necessity for commanders to learn to

"...distinguish between men who are simply afraid and those who are beginning to find fear uncontrollable. To distinguish between a man who needs to be encouraged to carry on and one who should quietly be got rid of,

for the time being, lest his fear become infectious, can test experienced leaders. During the trial by court martial of a soldier for cowardice in Korea, a civilian counsel for the accused was trying subtly to shift the blame onto the shoulders of the platoon commander who, he claimed, should have seen that the man was on the verge of a breakdown. 'Could you not see,' he demanded aggressively, 'that Fusilier L... was trembling involuntarily?' The young officer's splendid reply was 'We were ALL trembling involuntarily.'" (33)

In the same vein, the leader should provide the best amenities possible under the circumstances, including food, shelter and cleanliness. The troops who know that their leaders are living up to this valuable and venerable military tradition will understand the implicit message that underlies it: "As I show that your physical comforts are important to me, you can see that I consider each one of you valuable, and you know that I will not waste your lives needlessly in battle." Loyalty in battle is, after all, a two-way process.

Leaders should also be alert to undue confusion or agitation in their troops while under fire, and should set a firm, calm example. The timely joke is of inestimable value in this respect. The leader should help turn their minds outward, away from their own troubles and toward their comrades, to reinforcing each other's efforts, doing the job at hand, and supporting the base fighting mission. The emphasis should be on teamwork and accomplishment ("We're all counting on you."), to appeal to that part of each person's ego which wants to perform honorably under fire, to be thought well of by his or her comrades, and to be part of the best unit in the winning force. By setting a calm example, not minimizing the occasion but instead helping the troops rise to its demands through pride and loyalty, by making them part of something bigger than themselves, the USAF leader is following the example of the great leaders of history. Morale, in this context, becomes a matter of concentration of purpose, competence, honesty, selfless generosity, dignity and exemplary behavior (17).

Sleep Discipline

Medical personnel must impress on commanders the importance of making sure that their troops get adequate sleep, to the extent that the situation allows. Studies have shown that 4 hrs of uninterrupted sleep, especially if it includes the hours between 2 and 5 a.m., are necessary to maintain the efficiency of the troops over the long haul. In these studies, the 4 hrs of sleep consisted of the total amount of Stage 4 sleep and of REM sleep that the troops would have gotten under more normal conditions; that is, their sleep became more condensed and efficient in refreshing them in the field conditions of relative sleep deprivation. Less than 4 hrs of sleep led to progressive fatigue and inefficiency (13). This doctrine may be hardest to apply to the commanders themselves, who may believe that they are indefatigable. The military writings of Wellington, of Napoleon (whose ability to nap was legendary), and of Montgomery all bear witness that "the high commander who, under the strain of a prolonged campaign, can preserve an undisturbed sleep pattern is the right man in the right place! This may be contrasted with the ironic

notion that 'the military regard sleep as monks do sex: the really competent ones get along without it!'" (33)

Other Factors

Commanders should be aware that there are some specific circumstances which may increase their troops' susceptibility to fear: being alone, darkness, rumors, lack of plans, and insidious silence punctuated by loud or unexplained sounds. Knowing ahead of time that such things increase apprehension may help to reduce their effects, and the troops should be warned about them. At best, the men may recognize their own fears and joke about them. At least, they will not be surprised that they feel afraid. They will understand that there is no disgrace in feeling fear, only in giving way to it.

As medical personnel, we must assure that our line officers and NCOs understand that the best way to counter the demoralizing and fearful effects of combat is to foster good morale. The wise leader knows that there are clear indicators of poor morale available to him, such as an increase in abuse of alcohol and drugs, venereal disease, fights, and in AWOLs and similar Article 15 offenses. One may also see an increase in a constellation of medical conditions, the prevention of which is a function of personal discipline: sunburn, frostbite, immersion foot, malaria (the troops are not taking their prophylactic medications and sleeping under their mosquito netting), food-borne diseases (improper hygiene), and other such maladies. Further, a unit that is well led and which knows it will identify itself with its leader and will begin to use his or her way of speaking, habits of behavior, and even personal mannerisms (6). This magical identification with a leader who is perceived as wise and powerful is a notable indicator that morale is high. Although a unit with good morale may not display its discipline in the "snappy salute" sense, it will take good care of itself. The unit will practice the essentials necessary to preserve its own health and its operational readiness, and the troops will reinforce each other in following the formal and informal rules which maintain and increase their collective effectiveness.

Second-Echelon Measures

Almost all of the literature concerning the initial care of combat fatigue victims has been written by U.S. Army psychiatrists. One of the clearest descriptions of this care was given by W. C. Menninger in his classic monograph, "Psychiatry in a Troubled World," in which he discussed the treatment regimen developed by the psychiatrists in the Mediterranean Theater in World War II.

"By their plan the battalion aid station surgeons were indoctrinated with "first aid" psychiatry. It was they who had to decide whether a man should be returned to duty, given a brief respite, or evacuated to the clearing station. It was fully appreciated that many soldiers, if returned to the battalion kitchen area and permitted a night of sound sleep with the aid of a mild sedative and some warm food, would be ready in 24 hours to return to

combat. No record was ever kept of the men so handled, but it is known to be a sizable percentage of the men seen at the battalion aid station.

The seriously upset soldiers were sent 2-5 miles farther back to the division clearing station where the division psychiatrist had his headquarters and treatment center. This sometimes was in a tent or in a commandeered building such as a schoolhouse, factory, or whatever might be available. The soldier arrived here from his foxhole within 1-3 hours. Each one was seen initially by the psychiatrist and interviewed briefly. If he was recognized to be too sick to benefit from brief rest and such psychotherapeutic help as could be given in a short time, he was immediately evacuated farther back. The largest percentage of the soldiers who came to the clearing station remained there for 48 hours. These men were given sufficient sedation to insure a good 12-24 hours of sleep, only interrupted when awakened for food. On the second day, they had an opportunity to shave and bathe. Approximately 40% could return to combat on the third day. Follow-up studies suggest that many of these men carried on indefinitely. Perhaps 25% of this group had recurrence of symptoms and became repeaters." (28)

Menninger goes on to describe the treatment of those not handled at the clearing station (which, in our terminology, would be an off-base 2-E facility). The worst casualties, or those not responding to brief intervention, were sent to "exhaustion centers" 16-24 km (10-15 mi) behind the lines. These were staffed by 12 officers and 99 enlisted and were equipped to take care of 200-500 psychiatric casualties. Patients remained there 5-8 days and were treated with rest, recreation, and narcosynthesis using sodium pentothal. These centers developed training platoons, directed by line officers, "which provided an additional 2-5 days of military activities at a graded tempo to prepare the men for return to combat. Of the combat casualties, 20% were returned to combat from these centers."

Menninger notes specifically that, besides adhering to the classic treatment principles of proximity-immediacy-expectancy, the entire program assumed that the chief preventive efforts were a function of commanders, not of the medical personnel, and that the active support of the line officers was required in order to assure its success.

Thus we see that the elements of care at the 2-E level include the location of the unit, its staffing, its function, the treatment setting, the principles of management, the use of medications, and the options available for disposition of those treated there.

Location and Staffing

Plans for locating the USAF 2-E mental health services are still being worked out as this is being written, but the final doctrine, configuration, and location will probably not differ greatly from what I will describe later,

and will correspond in function, if not in location, to the system of which Menninger wrote. Medical personnel remaining on a base under continuing attack or threat of attack will probably consist of a few flight surgeons, perhaps a surgical specialist, some medical technicians and ambulance drivers, and a mental health team consisting of a psychiatrist, a psychologist, a clinical social worker, and some mental health technicians. The remainder of the local medical and mental health personnel, perhaps augmented by others brought in under mobilization plans, will work at one or more sites located 5-10 km (3-6 mi) off-base; each site will be independently capable of giving stabilizing medical care in support of perhaps 4000 troops.

Although preliminary plans call for a psychiatrist, a psychologist, a clinical social worker and 2 mental health technicians to augment each 2-E facility, current USAF manning levels make it unlikely that more than 1 or 2 off-base 2-E facilities per base will be so staffed. Thus, each local Director of Base Medical Services (DBMS) may well have to decide how best to use the available mental health staff, considering the on-base situation, the off-base situation, the adequacy of communication and transportation links, the combat/casualty situation, the nature of the threat, and other such variables. The disposition of local mental health resources may be changed as the situation dictates, and such local flexibility should not be hampered by excessive doctrinal rigidity. Common sense should prevail, and all concerned should be aware that their experience with the realities of the situation may quickly supersede set-piece planning.

Why am I so insistent that early treatment be given at the on-base 2-E facility rather than off-base? In a lecture to USAF mental health professionals in 1983, an Israeli psychologist pointed out the value of having mental health professionals use their knowledge and experience close to the fighting:

(1) They can use their professional stature to resist local unit commanders who want to evacuate troops with symptoms of combat fatigue. Less knowledgeable people might give way to such pressure.

(2) They can respond realistically to any troops who say "You don't know what it's like," since they live on the same base and under the same conditions. This corresponds to the principle that flight surgeons should fly in unit aircraft, both in peace and in war, to meet the flier on equal footing in terms of understanding the situation personally. Although some 2-E facilities off-base may also need a mental health capability, I see it as crucial that patients with only mild or early symptoms be kept on-base, along with a contingent of mental health personnel (A. Hess, personal communication).

To his reasons, I would add a third. There is very little personal combat experience left among USAF medical personnel today, officer or enlisted. To leave the triage decisions in the hands of the flight surgeon or DBMS, who are also likely to have neither combat nor psychiatric experience, is to put the troops doubly at risk of the wrong decisions being made. Mental health workers must be on-base, making every effort toward rapid, effective interventions: reassuring, explaining, exhorting, and above all, returning troops to their units as rapidly as possible.

What, then, might be the function of a 2-E site off-base? I see this as an overflow facility, used for patients who are truly mentally ill, or who have not been able to return to duty as expected and are awaiting evacuation. This facility may also receive patients when the on-base 2-E facility is over-run with troops. I am sure that the realities of the situation faced by the DBMS and the mental health staff will quickly result in the available facilities being used in the most efficient manner possible, if the tried-and-true principles outlined here are intelligently applied.

Function of the 2-E Facility

Clearly, the burden of the initial management of acute symptoms immediately after a base is first attacked will fall upon whatever medical personnel remain on that base, whether or not they have had formal mental health training. Another Israeli Defense Force psychologist has emphasized that such reactions may overwhelm unprepared medical personnel, especially if they themselves have also just experienced their first attack. Human nature leads one to look to any perceived authority for help in such crises, and the disaster literature leaves no doubt that anyone who is seen as having special knowledge or skills in such a case will quickly be sought out. When confronted with troops having combat shock reactions, medical personnel will certainly look to colleagues with mental health training--ANY mental health training--to handle the unwounded stress casualties (R. Levy, personal communication). By, now the reader must be aware of the necessity not to overreact to such circumstances by evacuating troops to the rear--not even a little bit to the rear--because of the perceived secondary gain. "If they ain't hurt, don't ship 'em out!" Such an inelegant phrase is at least easy to remember in a crisis and may be used by medics and line personnel alike. If the mental health troops on a base overwhelmed with somatic casualties are pressed into triage, litter-bearing or treatment teams, they may join in the course of least resistance and ship the unhurt but stunned and sobbing troops off-base to a less harassed 2-E facility. If this impulse is not resisted, there will be an intolerable loss of unwounded troops to off-base locations from which it may prove very difficult to reclaim them. Clearly, an on-base holding facility must be provided in advance to the DBMS by a wing commander who understands the principles involved, explains them to the commanders of the various squadrons, and supports the DBMS in their application. Reflecting upon Richardson's Tranquility House, I recommend that such an on-base facility be established in a reasonably secure location, away from primary targets, and run by the available mental health personnel. In spite of stated doctrine, flexibility in assigning mental health nurses and occupational therapists to this facility may also prove useful.

In the personal communication previously noted, Levy commented that the Israeli medical service organizes its combat stress casualties along military line, with unit names rather than medical names. Under this model, each USAF psychiatric technician might direct a "flight" of 10 or more casualties. Three or more flights would comprise a "squadron," with the squadron command element consisting of the psychiatric social worker, an NCOIC, and, if available, an occupational or physical therapist. This latter function might even be filled by a knowledgeable physical training technician from the base gymnasium. The structure of this local treatment team would thus emphasize the military aspects of the situation and minimize the medical aspects. At this

level, treatment essentially consists of acknowledging a temporary inability to work, without falling into the medical model (taking a history, writing up a chart, making a formal diagnosis, etc.), which reinforces the patient role. Such troops--do not call them "patients"!--should not be formally admitted to the facility. "You're not a coward, you're not sick, you're just worn out and you'll be all right in a day or two" must be the constant theme. A chance to rest, a hot meal (the U.S. Army's "3 hots and a cot"), some reassurance, and an appeal to honor, group loyalty and the mission may be all that is necessary. In fact, at his first contact with the medics, all that a scared kid may need is for someone in authority to tell him that he's all right, and that he must get back to work, do his part, and not let his buddies down.

Principles of Treatment

The treatment of acute combat reactions or of combat fatigue on-base may be summarized in the acronym BICEPS. Each principle might, of course, be discussed at length, but, in the total context of this discussion, they are identified as follows:

- BREVITY-----Treat briefly, from 12-72 hrs, with the explicit goal of treatment being a rapid return to duty.
- IMMEDIACY---Treat as soon as the person's behavior makes it clear that he or she can no longer function as a productive squadron member. Do not wait for full collapse of function, especially if squadron authorities or buddies indicate that this individual is becoming nonfunctional. Do not wait for an outside consultant, either.
- CENTRALITY--Treat combat fatigue in a single location, separate from somatic casualties and "sick" patients, with a consistent dispositional policy, preferably administered by a single individual.
- EXPECTANCY--Treatment should be aimed at getting the individual back to duty, and all concerned must expect this to be the inevitable and only outcome. We must ally ourselves with the conscious will to remain and to do the necessary duty, and work toward that so that the fatigued person can return to friends, unit and job. The therapeutic alliance must not allow any other goal to interfere with this one. We work to get him well and we agree that the functional definition of "get well" is a return to duty.
- PROXIMITY---Treat close to the unit, so that cohesion continues. This will be most concretely demonstrated by having the person's friends and commander visit, thus proving that they do not reject combat fatigue victims as cowardly or unworthy. Some who do so may be unable to tolerate any such tendencies in themselves and thus reject those who symbolize them. Such people will contribute to the problem by increasing the victim's guilt and, if they are leaders themselves, may lose troops unnecessarily because of this attitude. The close liaison with the parent unit will not only help

the troops in question, but will demystify the whole experience for the unit as well, and will show the lack of secondary gain. Here again, the value of keeping this 2-E function on-base rather than several kilometers away is obvious.

SIMPLICITY--Treat in the here-and-now, aimed at a return to duty. This is not the time for a full-scale psychiatric evaluation and formulation, or a treatment contract extending into the indefinite future.

Medications

Psychopharmacology, like other areas of drug therapy, is a dynamic and rapidly changing field. Each physician uses medications in a highly personal way, and psychiatrists are no exception. Some are chemical nihilists, while others write a prescription for almost every patient they see. Thus, our precedents for the use or nonuse of medications in combat situations are by no means applicable to all situations or all therapists. In World War II, psychiatrists frequently used sodium pentothal or sodium amytal to help soldiers abreact their emotional turmoil. A review of the use of medications in Vietnam by some 40 psychiatrists revealed that a large proportion of them used anxiolytic and neuroleptic agents, even in early or mild cases of combat fatigue (8). These therapists reported the use of recuperation, social therapy (the milieu of expectancy), and medications, in that order, in the 2-E environment. They used anxiolytics in about 30% of their cases, mainly for early symptoms, including apprehension (especially the short-timer's syndrome), sleep disturbances, tremors, and increased startle reactions. They used neuroleptics in about 20% for threatened assaultive behavior, defects in judgment, or other behavioral changes which concerned or alarmed the unit. Neuroleptics were used with increasing frequency in patients with increasingly disturbed behavior, especially in those for whom recuperative facilities seemed to be of little use.

More recent practices contradict these findings. The Israelis, as we have noted, are much more interested in behavioral treatment. One source cites the use of medications, and only tricyclic antidepressants at that, in only 8% of the 60 soldiers referred for 3-E and 4-E treatment out of the 600 soldiers who were evacuated as combat fatigue victims in their 1982 campaign in Lebanon. The treatment program for the majority consisted of "walking and talking," abreactive individual and group psychotherapy, individual and group sports activities, and combat-oriented military training (4). By contrast, the British, in their Falklands Islands campaign, used short-acting benzodiazepines as a prophylaxis against excessive fatigue due to insomnia, evidently with good results (29).

I see two major cautions against the early use of medications. First, their use tends to reinforce the sick role, since the giving of medications is one of the hallmarks of the physician-patient relationship in our society. Second, many psychotropic medications have a duration of action longer than the 72 hrs that a combat fatigue victim may spend in a 2-E facility, especially if one takes into account the active metabolic products of some of our drugs. Sending a person back to duty with drugs still active in his body may be dangerous. Even in peacetime, people in the many combat support positions

covered by the Personnel Reliability Program would not be allowed to take such medications and continue to work in their sensitive, demanding jobs. The use of such medications under combat conditions must thus be thoughtfully weighed for the risk:benefit ratio, both for the individual and for the mission.

In the end, the decision to use or not to use psychotropic medications rests, as always, with the physician on the scene. There is much information on this subject elsewhere, and anyone faced with this situation would do well to know as much as possible about a few psychotropic drugs before the combat situation occurs, when there will be no time to look them up. My advice is to use such drugs sparingly and for specific target symptoms, with full consideration of the two negative factors already mentioned.

Treatment Setting

Although one may find it impossible to imagine what a 2-E facility might look like, on- or off-base, perhaps a description of such a function in the Israeli campaign in Lebanon will be useful, especially when compared and contrasted with Menninger's previously cited description of a similar function in World War II.

"Initially, (the) team would conduct an interview to establish where the soldier had been, what he had done, and what had happened to him. This interview was oriented objectively rather than toward thoughts and feelings. The team confirmed two of the observations made in previous wars. First, thoughts and feelings inevitably followed the description of the objective events. Second, just describing what had happened clarified events and reduced the emotional turmoil. The team would allocate the next 6-8 hours of treatment to physical replenishment (water, food and rest). Then the soldier was given useful tasks to do and invited to join in supportive individual and group psychotherapy. Next, the team arranged for comrades from the soldier's unit and for the unit commander to visit the soldier. Then the soldier himself was taken to visit the unit. In these ways, mutual confidence between the soldier and his unit was restored. When the soldier had recovered enough to return to the unit, the team would arrange for comrades from his unit to pick him up. This team took advantage of its proximity to the front and the soldier's unit to maximize expectation that he would return and to reinforce the soldier's link to his comrades and commander. The team observed that units were happy to receive the soldier back, confirming the finding from other sources that under stress group members prefer someone they know to someone they do not know, regardless of presumed competence. With respect to themselves, the members of the psychiatric team noted that, because of their proximity to the front, they were all afraid. However, sharing the dangers of

combat with the soldiers being treated reduced their reluctance to return a soldier to his unit. They noted that their fear was diminished to the degree that the (medical) commander was competent in ensuring their supplies of gasoline and other essentials. When this was not the case, they became more afraid, hoarded supplies, and saw their clinical effectiveness decline. The team observed their tendency to overidentify with the soldier they were treating; to want to be the "good father," and to protect their new-found "son" from harm. This difficulty was reduced through once-a-day staff meetings for the purpose of discussing cases, providing mutual support, and working through emotional conflicts.

The Israelis observed that the psychiatric symptoms changed from the time the soldier broke down at the front to the time he arrived at the (medical station). At the front, soldiers suffering psychiatric breakdown complained of an inability to perform--termed by the Israelis "the ticket out" of combat, while upon reaching the (medical station) they complained of difficulties with thoughts and feelings--termed "the ticket in" to treatment. The Israelis concluded that severity of initial symptoms had little to do with prognosis for recovery; the most important indicator of a good prognosis was the soldier's labeling himself as healthy, taking initiative in his own care, helping others, and helping run the treatment team's area." (10)

Thus we see the application of the BICEPS principles and the de-emphasis on medications and the "sick" role. Troops in this ambience must not be treated as patients. They must spend the day in uniform, not in pajamas, unless they are specifically supposed to be in bed resting for the first 12 to 24 hrs. Their days should be structured and should be used purposefully to maintain the identity of each as a functional military person. Daily roll call, announcement of the day's schedule, physical training, useful activities such as digging trenches or bunkers, filling sandbags, improving the local area, playing sports and meetings should be the order of the day. The value of occupational and physical therapists is clear. Group therapy sessions must be carefully monitored and one must be particularly careful not to let them turn into "my experience was worse than your experience" sessions. Such an ambience may be perceived as rewarding symptoms, and troops may escalate each other into brief reactive psychoses if not restrained (R. Levy, personal communication). Thus, such sessions should be goal-directed, here-and-now, and oriented toward health rather than emphasizing symptoms and disability.

Options for Disposition of Troops

Therapists working at on-base or off-base 2-E facilities will have a number of choices for disposition of troops who come under their care. Precedent, imagination and experience on combat exercises offer the following; others may be developed as the exigencies of the situation dictate.

- (1) Immediate return to duty.
- (2) Hold for a brief period, perhaps with a meal, rest and explanation, and return to duty without having been admitted.
- (3) Hold overnight, as in (2), without admission. Possible use of a single short-acting benzodiazepine for sedation.
- (4) Relieve from duty (admission) and treat as indicated for 2-3 days. Use BICEPS principles. Return to duty.
- (5) Use of (4), with return to limited duty or to less hazardous or less demanding duty. This may be especially useful in the "old sergeant's syndrome."
- (6) Use of (4), with unsatisfactory results and with subsequent evacuation to a 3-E facility.
- (7) Treatments (1)-(5), with subsequent return to commander for administrative action, in instances where the problem is due to personality disorder rather than to medical or psychiatric problem.
- (8) Evaluation and immediate evacuation to the 3-E level when the diagnosis is a true and severe mental disease. This procedure should occur only rarely.
- (9) Evaluation leads to a diagnosis of probable somatic disorder and the patient is transferred to the appropriate treatment facility.

CONCLUSION

I have studied this topic, lectured on it, and discussed it with colleagues since 1979. I have immersed myself in the literature, both historical and current. I have read military biographies, histories, aeromedical reports, and the literature of military medicine and psychiatry. In a most introspective way, I have reexamined my service as a flight surgeon with the Air Commandos in Vietnam. There are a few personal remarks I wish to add to this document.

First, physicians and others thinking about combat must understand that they will have to deal with it from 3 points of view. We have already thoroughly discussed the first, the care of others. Second, you must also think about caring for yourself. The realities of combat will reach you also, in a most intrusive and distressing way, and you will have to deal with your own feelings. Take care of yourself. Third, take care of your colleagues. Be alert for the abuse of alcohol as a solvent for pressures and emotions. Be aware that medics, too, need time off, especially those in the surgical arena, confronted daily with carnage beyond comprehension. Patients, self, and fellow medics: be aware of all 3.

You must also understand that wars tend to be come-as-you-are events, and you will have precious little time to read up on it once one starts. Field medical units usually do not include libraries, and so you will go with what's in your head and your own bag. Base or post libraries usually have very good

military sections and I urge you to read some books written by medical personnel about their experiences. The thoughtful reading of a few such books, combined with constructive thinking about what your role might be in such a situation, may help you prepare yourself in ways that would not otherwise occur to you or to those who train you.

If you are an officer or an NCO, you may well have to exercise command of troops in the combat ambience, a fact which may never have occurred to you until now. The responsibility for giving orders which may result in the loss of life or limb by those to whom you give them is not a subject taught in medical school or emphasized in unit training exercises. It is an awesome responsibility, and you would do well to learn a bit more about combat leadership than the service usually teaches medics.

Finally, and most personally, I recall the words of General Robert E. Lee as he viewed the appalling battlefield at Fredericksburg after his victory over General Burnside: "It is well that war is so terrible, else we should become too fond of it." Having spent a year in Vietnam, and having been immersed in the medical literature of war since 1979, I agree. My wish and my prayer is that none who read these words may ever have to put into practice the principles of combat psychiatry.

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